

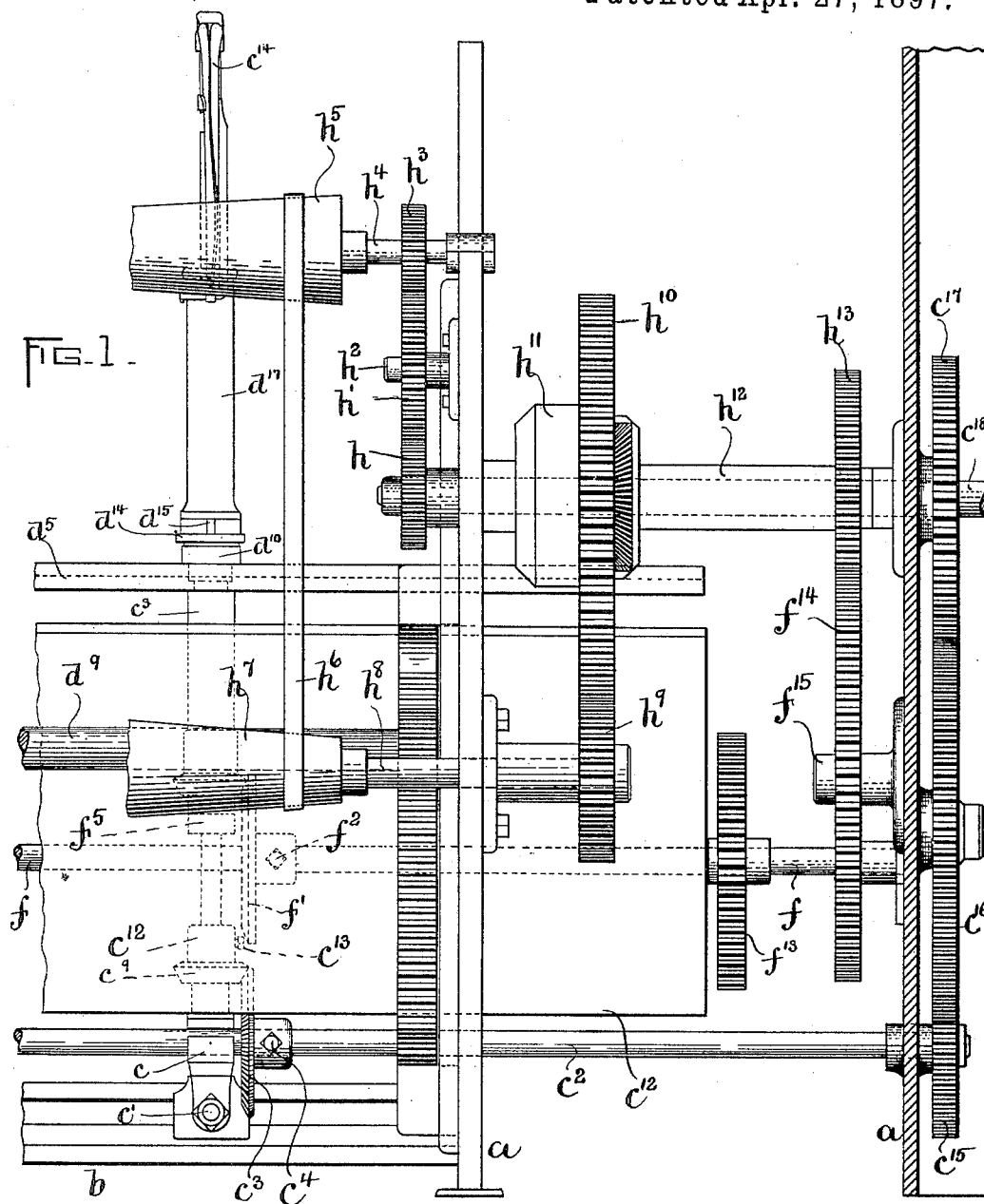
(No Model.)

2 Sheets—Sheet 1.

R. B. DALY.
ROVING MACHINE.

No. 581,573.

Patented Apr. 27, 1897.



WITNESSES:

A. D. Harrison.

Rollin Abell.

INVENTOR:

Richard B. Daly

by Wright, Brown & Lundy
Atty.

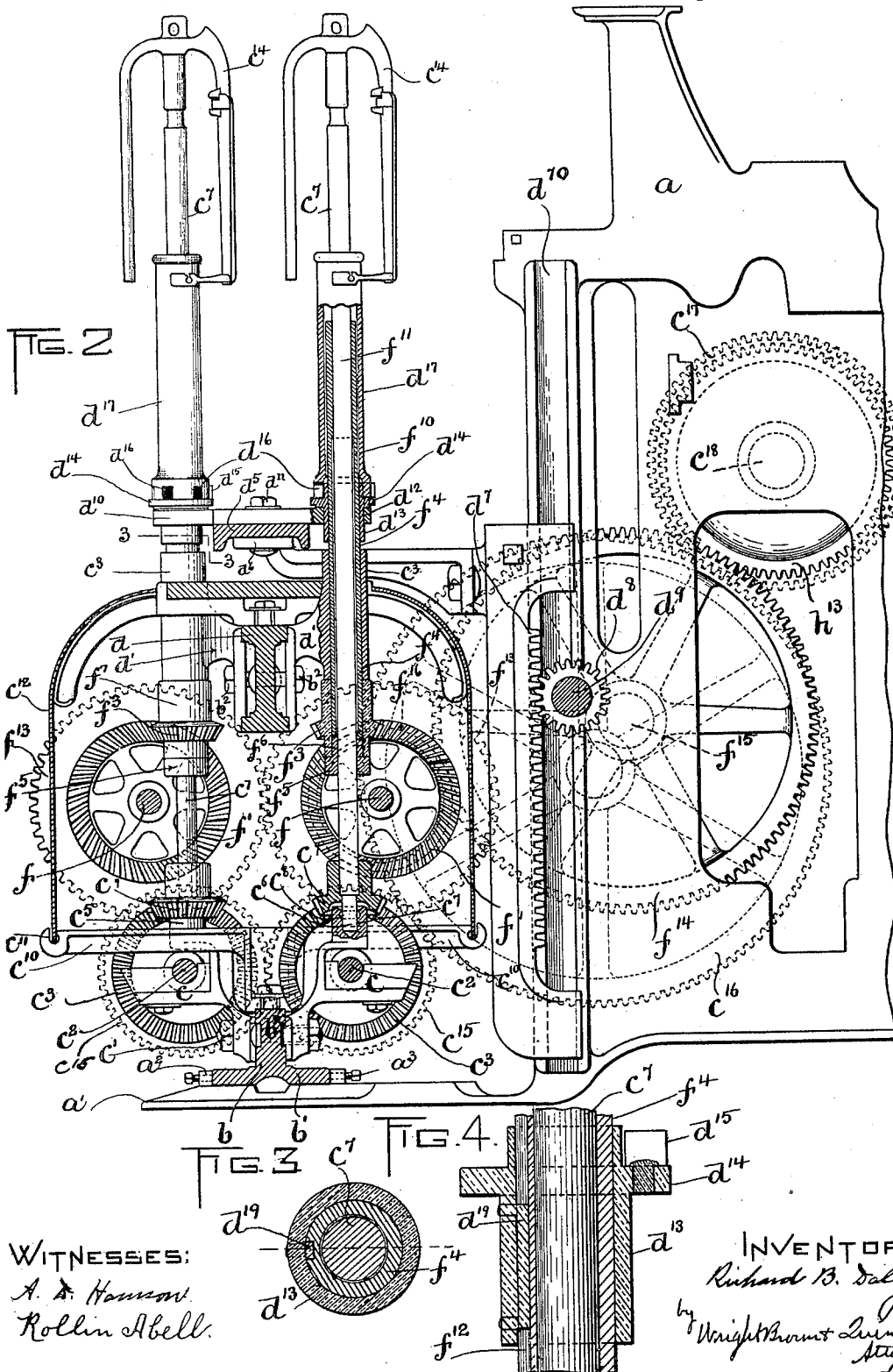
(No Model.)

2 Sheets—Sheet 2.

R. B. DALY.
ROVING MACHINE.

No. 581,573.

Patented Apr. 27, 1897.



UNITED STATES PATENT OFFICE.

RICHARD B. DALY, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO THE
WOONSOCKET MACHINE AND PRESS COMPANY, OF SAME PLACE.

ROVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,573, dated April 27, 1897.

Application filed September 19, 1895. Serial No. 562,956. (No model.)

To all whom it may concern:

Be it known that I, RICHARD B. DALY, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Roving-Machines, of which the following is a specification.

This invention relates to an improvement in roving or similar machines; and it consists in the novel features of construction and relative arrangement of parts hereinafter fully described in the specification, clearly illustrated in the drawings, and particularly pointed out in the claims.

Reference is to be had to the accompanying two sheets of drawings, forming a part of this application, in which like characters indicate like parts wherever they occur.

In the drawings, Figure 1 represents a front elevation of a portion of a roving or similar machine constructed in accordance with my invention. Fig. 2 is a detailed view showing the construction and arrangement of parts by which the flier and bobbin are rotated and the bobbin raised and lowered. Fig. 3 represents a cross-sectional view on the line 3 3 of Fig. 2. Fig. 4 represents a longitudinal section of the bolster and its associated parts.

Prior to my invention in machines of this kind it has been the practice to give a vertical movement to the gearing and shafting by which the bobbins were rotated. This construction is objectionable for many reasons. The shafting having a vertical movement, it is necessary to strengthen the machine-frame for this particular purpose, and, more than that, it is necessary to make the machine heavy at the base to compensate in the change in the center of gravity with the up-and-down movement of the shafting and gearing referred to. By my invention these objections are overcome. While the bobbin has an up-and-down as well as rotary movement, as before, the shafting and gearing that rotates the bobbins are fixed against all movement except that of rotation. Thus the power heretofore used for raising the bobbin with its connected shafting and gearing may be greatly diminished, since it is only necessary to carry up the auxiliary bolster-rail and the bobbins, the shafting not being raised and

lowered, as in other machines. Moreover, I am enabled to place the shafting near the base of the machine, thereby greatly adding to its stability, and by this arrangement I am enabled to do away with considerable gearing between the main shaft and the gears that drive the bobbin.

Referring to the drawings, *a* represents the framework of the machine, divided, as usual, into sections or samsons, the power being applied, as usual, to the gearing located on the first samson. The framework or samson is provided with suitable base portions or supports *a'*, provided with lugs *a²*, in which are mounted set-screws *a³*. A rail *b*, having a base portion *b'* and an upper extending portion *b²*, rests upon the base portions *a'* and between the lugs *a²*, and is held in place by the set-screws *a³*. To this rail, by means of suitable bolts *c'*, are secured the bearings *c* for the shafts *c²*, upon which the gears *c³* are mounted and fixed thereon by means of set-screws *c⁴*; these gears driving the spindle, as shown. There are two shafts *c²* and two rows of the spindles, although a greater or less number of rows could be used.

Formed integral with the framework of each bearing there is a step *c⁵*, apertured, as at *c⁶*, to receive the end of the spindle *c⁷* and act as a support therefor. This step may be provided with an oil-reservoir *c⁸*, if desired.

c¹⁰ represents arms integral with the framework of the bearing *c*, that extend laterally outward from the rail *b*. At their extremities these arms are grooved, as at *c¹¹*, to receive a cover or casing *c¹²*, that incloses the gearing driving the spindles and bobbins.

c⁹ represents a beveled gear secured to the lower end of the spindle by a set-screw *c¹³*, this gear meshing with the gear *c³* on the shaft *c²*, the rotation of the shaft *c²* thus conveying motion to the spindle and to its flier *c¹⁴*. The shaft or shafts *c²*, where more than one are employed, are driven by means of gears *c¹⁵*, fast on the ends of said shafts on the outside of the first samson. These gears *c¹⁵* are in mesh with each other, as shown in Fig. 2, one being in mesh with an idle or intermediate gear *c¹⁶*, that in turn is driven by a gear *c¹⁷*, fast on the main shaft *c¹⁸*.

d represents the bolster-rail, suitably se-

cured to several sections or samsons of the framework of the machine. d' represents arms secured to this rail by bolts b^2 . These arms are arranged on either side of said rail, as shown, and are provided at their free ends with vertically-arranged hubs c^3 , suitably apertured to receive and act as bearings and supports for the quill that drives the bobbins, and necessarily also for the spindle that is arranged within the quills.

The rail d is stationary and not required to be as heavy as in other machines, since it only carries the bearings for the quills.

d^5 represents what I term a "supplemental" bolster-rail, arranged above the main bolster-rail d and outside of the casing and gearing, the bolster-rail d being arranged inside of said casing.

The supplemental bolster-rail d^5 is mounted upon the free ends of arms d^6 , that are connected to vertical racks d^7 , suitably mounted for a vertical movement and arranged to slide in suitable bearings d^{70} on the sides of the samsons. These racks are driven by pinions d^8 , fast on the shafts d^9 , the latter being driven through the medium of the cone-pulley mechanism, that is common.

d^{10} represents plates secured by bolts d^{11} to the top of the supplemental bolster-rail. These plates extend on either side of the supplemental bolster-rail, and at their free ends are suitably apertured, as at d^{12} , to receive and act as a support for the bolsters d^{13} , the latter being free to turn in their supports and provided with the usual flange d^{14} , having a pin d^{15} to engage the slots d^{16} on the bottom of the bobbin d^{17} .

The supplemental bolster-rail serves to raise and lower the bobbin by means of the bolster, thus obviating the necessity of raising shaft by which the bolster and bobbin are rotated.

f represents shafts corresponding in number to the row or rows of spindles, one shaft being used where there is one row. On these shafts are rigidly mounted skew-gears f' by means of set-screws f^2 . These gears engage beveled gears f^3 , rigidly mounted upon the lower end of the quills f^4 , the said quills being hollow and arranged upon the spindles c^7 . These gears f^3 at their lower end rest upon collars f^5 , rigidly mounted upon the spindles by means of set-screws. (Not shown.) Thus the quills and gears f^3 , to which the quills are rigidly connected, are supported by these collars, the gears being free to turn on said collars. These collars are provided with an upwardly-extending hub portion or flange f^6 , that is arranged in the hub portion of the gears. The hub portion f^7 of the gears f^3 extend above and below the teeth of the gears, as shown, the lower portion of this hub surrounding the hub of the collar f^5 , as already stated, and the upper portion of the hub surrounding and engaging the lower end of the quill, to which it is rigidly attached. The lower end of the quill, preferably, does not

quite touch the hub of the collars f^5 . The quill is chambered, as at f^{10} , for a portion of its length, the upper portion of the quill not being chambered and fashioned to rotatably fit the spindle and form a bearing between said quill and spindle, as at f^{11} . Thus two bearing-points are provided for the gears and their attached quills—to wit, at f^{11} between the spindle and quill and at the opposite ends of said quills by the hubs of the collars f^5 and gears f^3 .

d^{19} represents a spline or feather secured in any desired way on the inside of the bolster d^{13} and arranged to slide in the groove f^{12} in the quill. By this means provision is made for the rotation and the vertical movement of the bobbin.

f^{13} represents gears fast upon the shafts f and meshing with each other, whereby said shafts are driven in unison. Power is conveyed to one of these shafts by means of a spur-gear f^{14} , mounted upon the short shaft f^{15} , this gear meshing with the pinion f^{16} , fast upon one of the shafts f , this pinion being shown in dotted lines in Fig. 2.

The power from the main shaft is communicated to the gear f^{14} as follows: The main shaft c^{18} at its end inside of the second samson is provided with a spur-gear h , that meshes with an intermediate gear h' , mounted upon a short shaft or stud h^2 , the gear h' in turn meshing with the spur-gear h^3 , fast upon the shaft h^4 , upon which is rigidly mounted a cone-pulley h^5 , a belt h^6 connecting this pulley with a similar pulley h^7 , fast upon a shaft h^8 , said cone-pulley shafts being suitably mounted in the framework of the machine. One end of this cone-pulley shaft h^8 is provided with a pinion h^9 , that meshes with a spur-gear h^{10} , forming a part of any preferred differential motion h^{11} used in this class of machines. From thence the power is transmitted, by means of a sleeve h^{12} , loosely mounted upon the shaft c^{18} , provided with a spur-gear h^{13} , that meshes with the gear f^{14} , to the shaft f .

Thus it will be seen that the power driving the spindles is transmitted from the main shaft c^{18} by means of the shafts f and the intermediate gearing and that the power for operating the supplemental bolster-rail and also the bobbins is transmitted from the main shaft by means of the cone-pulleys and the differential motion. The spindles c^7 and their fliers are driven by the shafts c^2 and their connected gearing, while the quills are rotated through the medium of the shafts f , located directly above the shafts c^2 , the bobbins being raised and lowered by means of the racks connected to the supplemental bolster-rail that carries the plates in which are mounted the bolsters b^{13} .

From the foregoing it will be seen that I have invented an exceedingly efficient and simple machine. The power necessary for driving the machine is greatly lessened and the stability and efficiency of the machine enhanced. The various shafts and gears be-

ing located at the bottom of the machine increases its stability, greatly reduces its cost of construction, and greatly increases its durability.

5 Attention is particularly called to the manner of connecting the differential motion with the shafts that drive the quills. These shafts being stationary, I am enabled to dispense with the pivoted shaft heretofore used with its many modifications, the sleeve of the differential motion being provided with a spur-gear which intermeshes with an idle-gear that in turn transmits the power directly to the shafts *f*.

15 I am aware of the English Patent No. 2,380, dated October 18, 1859, which discloses a quill loosely surrounding the spindle and having a bearing in a fixed or non-rotary portion of the framework, and I do not claim herein anything disclosed in said patent.

20 Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all the modes of its use, what I claim, and desire to secure by Letters Patent, is—

1. In a roving or similar machine, the combination of a spindle carrying a collar, a quill loosely surrounding said spindle and finding

a bearing on said collar, a vertically-movable bolster rotatively and slidingly engaged with said quill, means for raising and lowering the bolster, means for rotating the quill, and means for rotating the spindle, arranged substantially as described. 35

2. In a roving or like machine, the combination of a spindle carrying a collar, formed with an enlarged lower portion constituting a rest or step, and a reduced upwardly-extending portion constituting a bearing, a quill loosely surrounding the said spindle above the collar and admitting the upper end of the same, a gear on said quill and having an elongated hub portion extending over the reduced portion of the said collar, a vertically-movable bolster rotatively and slidingly engaged with the quill, means for raising and lowering the said bolster, means for rotating the quill by engagement with the gear thereon, and means for rotating the spindle. 40 45 50

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 14th day of September, A. D. 1895.

RICHARD B. DALY.

Witnesses:

A. D. HARRISON,
ROLLIN ABELL.